

## Weekly report (2017-8-21 ----- 2017-8-27)

Aug 27<sup>th</sup>, 2017, 19:52 pm

### 1. Research

#### 1.1 paper reading

Read several papers which is mainly related to nearest neighbor search, I find that there is an invisible line in the research of nearest neighbor search.

1. Data structures and algorithms for nearest neighbor search in general metric spaces

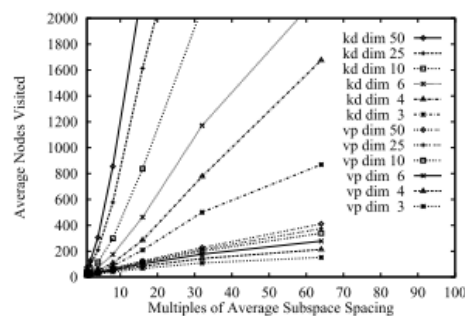


Figure 8: Off Data Plane Queries for Range Spaces of Increasing Dimension.

This paper mainly related to vp-tree, vp-tree is used in T-SNE. The paper introduces the vp-tree in several forms as one solution and it makes a comparison with kd-tree. T-SNE construct the graph using the technique of vp-tree, but the performance is not good when the dimensionality of the data grows high.

2. Multidimensional binary search trees used for associative searching

This paper presents the multidimensional binary search (or kd-tree), it is a kind of data structure for associative searching.

3. Optimised KD-trees for fast image descriptor matching

This paper improved the kd-tree for a specific usage mainly for image descriptor matching. But we can use it in another way. The author improved the search performance significantly. This form of PKD-tree with multiple search trees gives a very substantial improvement over the standard single KD-tree.

## 2. Progress

Table 1. Progress

Tasks	DUE DATE	TASKS IN PROGRESS
Dimensionality reduction	Sept 30 <sup>th</sup> , 2017	Test the time of multicore bh-SNE